4.8 Hydrology and Water Quality

This section evaluates potential environmental impacts related to hydrology and water quality during construction and operation of the project. In addition to the analysis provided in this section, the following subjects are related to hydrology and water quality, but are evaluated in other sections of this EIR:

- Potential impacts to riparian habitat and federally protected wetlands and waters are addressed in Section 4.03 (Biological Resources).
- Potential impacts related to loss of topsoil are addressed in Section 4.05 (Geology and Soils).
- Potential impacts related to location on or near a hazardous materials site is addressed in Section 4.07 (Hazards and Hazardous Materials).
- Potential impacts related to construction of new storm drain facilities are addressed in Section 4.14 (Utilities and Service Systems).

4.8.1 Setting

Regional Climate

Humboldt County has moderate temperatures and considerable precipitation. Temperatures along the coast in July are usually in the 60's (Fahrenheit) and vary only 10 degrees Fahrenheit (°F) from summer to winter, although a greater range is found over inland areas. Temperatures of 32°F or lower are experienced nearly every winter throughout the area, and colder temperatures are common in the interior. Maximum temperatures for the year often do not exceed 80°F on the coast, while temperatures greater than 100°F occur frequently in the mountain valleys. July mean maximum temperatures are in the 60's Fahrenheit throughout an area of 15 to 30 miles in width along the coast. In most years, rainfall occurs each month of the year, although precipitation amounts are negligible from June through August. Seasonal totals average more than 40 inches in the driest area, and exceed 100 inches in zones of heavy precipitation. About 90 percent of the seasonal total rainfall falls in the seven months of October through April. Most of the rainfall is associated with storm fronts that move in from the Pacific Ocean. There are few thunder showers in the mountains during the summer, but they are infrequent. Because of the moisture and moderate temperature, the average relative humidity is high.

Largely as a result of the proximity of the cool Pacific Ocean, the coastal area has a cool, stable temperature regime. With increasing distance from the ocean, the marine influence is less pronounced and inland areas experience wider temperature variations and lower humidities (Humboldt County 2018).

Groundwater Hydrology

The project area lies within the North Coast Hydrologic Region and overlies the western portion of the Eureka Plain Groundwater Basin. The Eureka Plain Groundwater Basin is bounded by the Little Salmon Fault to the south, Humboldt Bay and Arcata Bay to the west and northwest, and by Wildcat series deposits to the east. The primary water-bearing formations in the basin include the Pliocene Hookton Formation and, to a lesser extent, Holocene dune sand west of Humboldt Bay and alluvial deposits southeast of Arcata Bay and along the Elk River (CDWR 2018).

Beach and dune sand deposits occur in an almost continuous strip along the coast. The dune sand is more than 100 feet thick and attains a maximum width of three-fourths of a mile along the North Spit between the entrance to Arcata Bay and the mouth of the Mad River. The dune sand is loose, subangular to subrounded, fairly well sorted, fine to coarse grained, and gray or brownish gray in color. The dune is developed as a source of water supply for shallow wells or well points that are driven into the sand far enough to penetrate the lens of freshwater overlying seawater. Recharge to the dune sand is almost wholly from local precipitation (CDWR 2018).

Based on subsurface investigations at a former pulp mill on the Samoa Peninsula, groundwater exists under unconfined conditions at depths ranging from approximately 12 to 16 feet below ground surface with elevations ranging from 5 to 9 feet NAVD88. No confining layers have been observed and it is assumed that the saturated zone extends from the water table to at least 150 feet below ground surface (depth of the deepest boring at the pulp mill) (SHN 2011).

Results of an October 2010 tidal influence study indicate that groundwater elevations along the bay margin in the vicinity of the former pulp mill are influenced by tidal fluctuations in Humboldt Bay. Tidal influence diminished with distance away from the bay and it is assumed that tidal influence would begin to increase in proximity to the ocean side of the peninsula (SHN 2011).

Groundwater Quality

The communities of Fairhaven and Finntown, surrounding industrial properties, Samoa Peninsula Union School, the Samoa Boat Ramp and Campground, and smaller commercial operations located on or near the City of Eureka Samoa Field Airport, do not have a wastewater collection and treatment system, and instead use individual septic systems that discharge to individual leachfields. Most of the existing septic systems are aging and are poorly suited for the soil and groundwater conditions that exist on the peninsula. Preventative maintenance is uncommon and failing systems are rarely identified until surface seepage is reported to the Humboldt County Division of Environmental Health. The NCRWQCB is concerned about the impacts of partially-treated effluent discharged to leachfields, groundwater, and Humboldt Bay due to the Peninsula's high water table and sandy soils.

Local Drainage

There is little surface water on the Samoa Peninsula due to coarse sandy soils and high infiltration rates; therefore, local surface drainage patterns are poorly defined on the peninsula. The only stormwater facilities within the project service area are located on industrial parcels.

Surface Water Quality

Impurities in the local surface runoff, shallow groundwater, and atmospheric deposition influence surface water quality on the Samoa Peninsula. The quality of adjacent Humboldt Bay tidal waters is also dependent on such significant hydrological and biological parameters as the timing and magnitude of freshwater outflow, complex circulation patterns in the bay, wind-driven mixing and resuspension of fine-grained sediments, time-varying salinity gradients and water temperature, and nutrient loading. Humboldt Bay has been identified as an impaired water body relating to dioxide toxic equivalents and polychlorinated biphenyls (SWRCB 2017).

Water quality in the Pacific Ocean is dependent on a number of regional and global factors, including climate and weather changes, currents and upwelling, and seasonal output from local rivers and estuaries.

Flooding

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Program flood insurance rate map for Humboldt County, the majority of the project site is within an area of minimal flood hazard (Zone X). Approximately 3,500 linear feet of the project is within a Zone AE designation near the community of Fairhaven and east of the Samoa Field Airport (FEMA 2018). The maximum base flood elevation for that area is 11 feet (see Figure 4.8-1, 100-Year FEMA Flood Zones Map).

Tsunami Inundation

The project area is located in a low-lying coastal setting directly onshore of an active subduction zone (Cascadia Subduction Zone) capable of generating very large magnitude earthquakes. Earthquakes along subduction zones have historically been one of the principal sources of tsunami generation. There is significant geologic evidence along the coast of much of the Pacific Northwest documenting the occurrence and effects of past tsunamis. In addition, there is local geologic evidence of past tsunamis, in the form of clean sand layers (interpreted as a tsunami deposit) that bury coastal wetlands surrounding Humboldt Bay.

Much of the low-lying Samoa Peninsula is subject to tsunami inundation, and is at substantial risk in the event of a large locally-generated tsunami event. Other than isolated high dunes northwest of the town of Samoa, the entire Samoa Peninsula typically is modeled as being subject to inundation during moderate to large tsunami events. A tsunami that inundates the Samoa Peninsula would result in catastrophic conditions over the entire project area, a high degree of structural loss, and significant loss of life; as such, the impacts to the proposed wastewater system should be evaluated in the context of the potential impacts to the communities it will serve (SHN 2018). The arrival time of a near-source tsunami is generally understood to be short, due to the small site-to-source distance. On the Samoa Peninsula, tsunami signs indicate where one is “entering” or “leaving” a tsunami inundation area and point to an established “Tsunami Evacuation Zone.”

4.8.2 Regulatory Framework

Federal

Clean Water Act

The federal Clean Water Act (CWA), enacted by Congress in 1972 and amended several times since, is the primary federal law regulating water quality in the United States and forms the basis for several State and local laws throughout the country. The CWA established the basic structure for regulating discharges of pollutants into the waters of the United States. The CWA gave the U.S. EPA the authority to implement federal pollution control programs, such as setting water quality standards for contaminants in surface water, establishing wastewater and effluent discharge limits for various industry categories, and imposing requirements for controlling nonpoint source pollution. At the federal level, the CWA is administered by the U.S. EPA and U.S. Army Corps of Engineers (USACE). At the state and regional levels in California, the CWA is administered and enforced by

the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs).

National Flood Insurance Program

FEMA administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues flood insurance rate maps identifying which land areas are subject to flooding. The maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 annual exceedance probability (i.e., the 100-year flood event).

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established in the CWA to regulate industrial and municipal discharges to surface waters of the United States. NPDES permit regulations have been established for broad categories of discharges including point source municipal waste discharges and nonpoint source stormwater runoff. A NPDES permit is required when proposing to, or discharging of waste into any surface water of the state. For discharges to surface waters, these requirements become a federal NPDES Permit from the RWQCB covering the project area.

State

California Coastal Act

Section 30231 of the Coastal Act states:

> The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30253 of the Coastal Act states in part:

> New development shall do all of the following:
>
> (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area…

Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act is the primary statute covering the quality of waters in California. Under the Act, the SWRCB has the ultimate authority over State water rights and water quality policy. The nine RWQCBs regulate water quality under this act through the regulatory standards and objectives set forth in water quality Control Plans (also referred to as basin plans) prepared for each region.

The five-member SWRCB allocates water rights, adjudicates water right disputes, develops state-wide water protection plans, establishes water quality standards, and guides the nine RWQCBs located in the major watersheds of the state. The joint authority of water allocation and water quality protection enables the SWRCB to provide comprehensive protection for California's waters. The SWRCB is responsible for implementing the CWA, issuing NPDES permits to cities and counties through RWQCBs, and implementing and enforcing the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (Order No. 2009-0009, as amended by Order No. 2010-0014). Order No. 2009-0009 took effect on July 1, 2010, and was amended on February 14, 2011. The order applies to construction sites that include one or more acres of soil disturbance. Construction activities include clearing, grading, grubbing, excavation, stockpiling, and reconstruction of existing facilities involving removal or replacement.

State Water Resources Control Board – Ocean Plan

The State Water Resources Control Board (SWRCB) adopted the 2015 California Ocean Plan (Ocean Plan) to protect the quality of ocean waters for beneficial uses. The Ocean Plan requires control of discharge of waste to ocean waters to protect against degradation of marine species and impacts to public health. The objectives and measures of the plan are applicable to point source and nonpoint source discharges to the ocean.

All publically owned treatment works are required to meet secondary treatment standards using technology based effluent limitations (40CFR part 133). In addition, the Ocean Plan provides the following General Requirements for Management of Waste Discharge to the ocean:

(a) Waste management systems that discharge to the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community.

(b) Waste discharged to the ocean must be essentially free of:

(1) Material that is floatable or will become floatable upon discharge.

(2) Settleable material or substances that may form sediments which will degrade benthic communities or other aquatic life.

(3) Substances which will accumulate to toxic levels in marine waters, sediments or biota.

(4) Substances that significantly decrease the natural light to benthic communities and other marine life.

(5) Materials that result in aesthetically undesirable discoloration of the ocean surface.

(c) Waste effluents shall be discharged in a manner which provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment.

(d) Location of waste discharges must be determined after a detailed assessment of the oceanographic characteristics and current patterns to assure that:

(1) Pathogenic organisms and viruses are not present in areas where shellfish are harvested for human consumption or in areas used for swimming or other body-contact sports.

(2) Natural water quality conditions are not altered in areas designated as being of special biological significance or areas that existing marine laboratories use as a source of seawater.

(3) Maximum protection is provided to the marine environment.

(e) Waste that contains pathogenic organisms or viruses should be discharged a sufficient distance from shellfishing and water-contact sports areas to maintain applicable bacterial standards without disinfection. Where conditions are such that an adequate distance cannot be attained, reliable disinfection in conjunction with a reasonable separation of the discharge point from the area of use must be provided. Disinfection procedures that do not increase effluent toxicity and that constitute the least environmental and human hazard should be used.

Finally, the Ocean Plan states:

> The beneficial uses of the ocean waters of the State that shall be protected include industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish migration; fish spawning and shellfish harvesting.

State Water Resources Control Board – Thermal Plan

The SWRCB adopted the 1975 Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan), which contains water quality objectives, including for coastal waters and enclosed bays. The Thermal Plan includes the following applicable water quality objectives:

3. Coastal Waters

A. Existing discharges

(1) Elevated temperature wastes shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance.

B. New discharges

(1) Elevated temperature wastes shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column.

(2) Elevated temperature wastes shall be discharged a sufficient distance from areas of special biological significance to assure the maintenance of natural temperature in these areas.

(3) The maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20°F.

(4) The discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle.

(5) Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

4. Enclosed Bays

A. Existing discharges

(1) Elevated temperature waste discharges shall comply with limitations necessary to assure protection of beneficial uses.

Regional and Local

North Coast Regional Water Quality Control Board

RWQCBs adopt and implement water quality control plans (Basin Plan) which recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The North Coast Basin Plan (NCRWQCB 2018) is the applicable Basin Plan to the project site, the objectives of which are described below.

NCRWQCB Order No. R1-2009-0045, Waste Discharge Requirements for Low Threat Discharges to Surface Waters in the North Coast Region, applies to discharges of construction dewatering. This order requires development of a best management practices/pollution prevention plan to characterize the discharge and to identify specific measures to control the discharge, such as sediment controls to ensure that excessive sediment is not discharged and flow controls to prevent erosion and flooding downstream of the discharge.

North Coast Basin Plan

The North Coast Basin Plan provides a definitive program of actions to preserve and enhance water quality and protect beneficial uses of all regional waters. Additionally, it describes the Regional Water Board's provisions for public participation and provides the framework for the development of discharge regulation.

The Basin Plan is the basis for the Regional Water Board's regulatory programs. Regional Water Board orders cite the Basin Plan's beneficial uses, water quality objectives, and prohibitions applicable to a particular discharge. The Basin Plan is used by other agencies in their permitting and resource management activities. Specifically, the Basin Plan states:

- Designates beneficial uses of surface waters and groundwaters.
- Sets narrative and numeric objectives that must be attained or maintained to protect beneficial uses.
- Defines implementation programs that include specific prohibitions, action plans, and policies to achieve the water quality objectives.
- Describes the Regional Water Board's monitoring activities.

The Basin Plan water quality objective for ocean waters states:

> The provisions of the State Water Board Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan) and any revisions thereto shall apply to ocean waters within the North Coast Region.

Humboldt Bay Area Plan of the Local Coastal Program

Section 3.17 (Hazards) states in part:

*** 30253. New Development shall:

1. Minimize risks to life and property in areas of high geologic, flood and fire hazard.
2. Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding areas.

The tsunami hazard policy in the Humboldt Bay Area Plan was amended in 2012 to prohibit new habitable living space below the predicted tsunami run-up elevation calculated at maximum tide plus a minimum of three (3) feet to account for future sea level rise and one foot of freeboard space, as well as other measures to reduce tsunami hazard (Section 3.17(B)(3)). Section 3.17(B) (Hazards, Development Policies) states in part:

3. Tsunamis–New development below the level of the 100 year tsunami run-up elevation described in Tsunami Predictions for the West Coast of the Continental United States (Technical Report H-78-26 by the Corps of Engineers) shall be limited to public access, boating, public recreation facilities, agriculture, wildlife management, habitat restoration, and ocean intakes, outfalls, and pipelines, and dredge spoils disposal. New subdivisions or development projects which could result in one or more additional dwelling units within a potential tsunami run-up area shall require submission of a

tsunami vulnerability report which provides a site-specific prediction of tsunami run-up elevation resultant from a local Cascadia subduction zone major earthquake.

4. Flood Plains–No critical facilities should be permitted to locate within the 100 year flood plain. Utility lines may cross hazard zones if there is no reasonable alternative and provisions are made to mitigate the hazard. Non-critical facilities should be permitted in the 100 year flood plain only if adequate flood control measures, such as control works, compact fill, etc., that would result in a site being beyond or above the 100 year flood extend, are provided. Further, the County will continue to review development in light of and impose conditions consistent with the National Flood Insurance Program.

Section 3.30(B) (Natural Resources Protection Policies and Standards, Development Policies) states in part:

8. Coastal Streams, Riparian Vegetation And Marine Resources

*** 30231. The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 4.10(B) (Rural Plan Designations-SAMOA TOWN MASTER PLAN LAND USE DESIGNATION OVERLAY) states in part:

STMP (Hazards) Policy 3:

New development associated with the provision of critical or significant community support functions (such as waste water treatment, provision of potable or fire fighting water, or fire and life safety command and equipment centers) or that may be converted into critical community shelter facilities in an emergency, or structures that house vulnerable populations that cannot be readily evacuated, including hospitals, schools, and care facilities for the elderly and/or disabled, shall be designed and located in a manner that will be free of the risk of catastrophic failure associated with earthquake or tsunami hazard, taking into account a minimum of 4.5 feet of sea level rise per century. The final approved plans for such facilities shall be reviewed and stamped as conforming to this standard by a California licensed professional civil engineer or a California licensed professional engineering geologist.

4.8.3 Evaluation Criteria and Thresholds of Significance

For the purpose of this EIR, the evaluation criteria and significance thresholds summarized below are used to determine if the project would have a significant effect related to hydrology and water quality. The following questions are from CEQA Guidelines' Appendix G Environmental Checklist Section IX. Would the project:

a. Violate any water quality standards or waste discharge requirements?

- Non-compliance with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Construction Permit, Order No. 2009-0009, as amended by Order No. 2010-0014 & 2010-006).

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

- Creation of a deficit in aquifer volume or lowering of groundwater levels.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or offsite?

- Alteration of the course of a stream, river, or waterway in a manner that creates erosion or siltation.

d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite?

- Creation of runoff water that would exceed the capacity of the drainage system.

e. Create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

- Creation of increased quantity of runoff such that capacity of storm drains would be exceeded.

f. Otherwise substantially degrade water quality?

- Non-compliance with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Construction Permit, Order No. 2009-0009, as amended by Order No. 2010-0014 & 2010-006).

g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

- Placement of housing within a mapped 100-year flood hazard area.

h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

- Placement of structures within a mapped 100-year flood hazard area.

i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

- Placement of facilities in areas of potential dam or levee inundation.

j. Inundation by seiche, tsunami, or mudflow?

- Placement of facilities in an area potentially affected by seiche, tsunami, or mudflow.

4.8.4 Approach to Analysis

Potential impacts to surface water quality are evaluated for both construction and operational activities. Construction impacts are evaluated for their potential to violate water quality standards and waste discharge requirements. The evaluation also considers additional runoff from new impervious areas, and whether the treatment techniques proposed as part of the project will provide adequate treatment in accordance with applicable regulations.

Flooding impacts are evaluated by assessing the project's compliance with local storm water runoff and detention requirements, as well as determining if the project is located within a FEMA flood hazard area or dam inundation area.

Tsunami impacts are evaluated in the context of the potential impacts to the communities the project will serve, as a tsunami that inundates the Samoa Peninsula would result in catastrophic conditions over the entire project area, a high degree of structural loss, and significant loss of life.

4.8.5 Impact Analysis

Impact HWQ-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality?

This impact analysis addresses CEQA Guidelines Appendix G checklist item IX.a) and the associated thresholds of significance identified in Section 4.8.3.

Construction

Construction of the pipeline and improvements to the Approved Samoa WWTF could generate discharges to water resources that could potentially violate water quality standards or waste discharge requirements. Project construction does not include any in-water infrastructure installation or near-water construction activities; therefore, there would be **no impact** to marine water quality.

Construction of the project would involve excavation, soil stockpiling, grading, and the installation of sewer pipe. There are multiple construction related activities that could have potential direct or indirect impacts on the water quality of local surface water features and shallow groundwater resources, including: sedimentation, erosion, handling hazardous materials, and dewatering. If not properly managed, applicable water quality standards and waste discharge requirements could be violated, and polluted runoff could substantially degrade water quality. The impact would be **significant**.

Operation

Project operation would collect, process, and dispose of wastewater from existing facilities (Short-Term Phase) and potential future infill development consistent with HBAP and zoning (Long-Term Phase). Treated effluent would be disposed of through the RMT II ocean outfall pipe, which extends 1.5 miles offshore. Currently, DG Fairhaven Power, located between Fairhaven and Samoa, discharges approximately 170,000 gallons per day (gpd) of processed water, following treatment, through the RMT II ocean outfall. Short-Term

improvements would add approximately 23,000 gpd, bringing the total estimated daily flow through the outfall to approximately 193,000 gpd. Long-Term improvements would add approximately 45,000 gpd, bringing the total estimated daily flow through the ocean outfall to approximately 238,000 gpd. If not properly managed, water quality in the vicinity of the outfall diffuser could violate a water quality standard or waste discharge requirement. However, the Approved Samoa WWTF would be required to obtain an NPDES permit which would specify an acceptable level of a pollutant or pollutant parameter including physical properties, solids, biologicals, and chemicals in a discharge and make sure that the state's mandatory standards for clean water and the federal minimums are met. The NPDES permit would be required to be amended to accommodate increased flow from the project.

The anticipated effluent water quality limits, established to protect the beneficial uses of the ocean including marine habitat and fish migration, are shown in Table 4.3-5 (see Section 4.3.5). These are the regulated standards that would be required to be met during operation, prior to discharge through the ocean outfall pipe.

The NPDES permit would require monitoring to determine compliance with established effluent limitations, establish a basis for enforcement actions, assess treatment efficiency, characterize effluents, and characterize the receiving water. The NPDES regulations require the permittee to maintain records and periodically report on monitoring activities. Because ocean outfall is regulated by existing standards established for the purpose of protecting the ocean, and the additional flow from the project would contribute a small fraction of the existing discharge and Approved Samoa WWTF discharge, the impact to the ocean environment from increased discharge from the project would be **less than significant**.

Summary

Construction of the project, if not properly managed, has the potential to violate water quality standards, the impact would be **significant**. Operation of the project's improvements at the Approved Samoa WWTF is estimated to improve water quality by removing existing negative effects to groundwater quality from continued use and potential future failure of existing private septic systems within Samoa Peninsula.

Significance *Significant*

Mitigation **HWQ-1a: Manage Stormwater during Construction**

The PCSD shall prepare a stormwater pollution prevention plan (SWPPP) specific to the project and be responsible for securing coverage under SWRCB's NPDES stormwater permit for general construction activity (Order 2009-0009-DWQ). The SWPPP shall identify specific actions and BMPs relating to the prevention of stormwater pollution from project-related construction sources by identifying a practical sequence for site restoration, BMP implementation, contingency measures, responsible parties, and agency contacts. The SWPPP shall reflect localized surface hydrological conditions and

shall be reviewed and approved by the project applicant prior to commencement of work and shall be made conditions of the contract with the contractor selected to build the project. The SWPPP(s) shall incorporate control measures in the following categories:

- Soil stabilization and erosion control practices (e.g., hydroseeding, erosion control blankets, mulching);
- Dewatering and/or flow diversion practices, if required (see Mitigation Measure HWQ-1b);
- Sediment control practices (temporary sediment basins, fiber rolls);
- Temporary and post-construction on- and off-site runoff controls;
- Special considerations and BMPs for water crossings, wetlands, and drainages;
- Monitoring protocols for discharge(s) and receiving waters, with emphasis placed on the following water quality objectives: dissolved oxygen, floating material, oil and grease, pH, and turbidity;
- Waste management, handling, and disposal control practices;
- Corrective action and spill contingency measures;
- Agency and responsible party contact information, and
- Training procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP.

The SWPPP shall be prepared by a qualified SWPPP practitioner with BMPs selected to achieve maximum pollutant removal and that represent the best available technology that is economically achievable. Emphasis for BMPs shall be placed on controlling discharges of oxygen-depleting substances, floating material, oil and grease, acidic or caustic substances or compounds, and turbidity. BMPs for soil stabilization and erosion control practices and sediment control practices will also be required. Performance and effectiveness of these BMPs shall be determined either by visual means where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination, (inadvertent petroleum release) is required to determine adequacy of the measure.

HWQ-1b: Construction Dewatering Permits

All construction dewatering shall be discharged to an approved land disposal area or drainage facility in accordance with a NPDES permit and North Coast RWQCB requirements. The PCSD shall apply for the NPDES permit and provide the NCRWQCB with the location, type of discharge, and methods of treatment and monitoring for all groundwater dewatering discharges, prior to dewatering activities. Emphasis shall be placed on those discharges that would occur directly or in proximity to surface water bodies and drainage facilities.

After Mitigation *Less than Significant with Mitigation*

With the implementation of Mitigation Measures HWQ-1a and HWQ-1b, impacts to surface water quality as attributable to the project would be reduced to a less than significant level through the inclusion of focused BMPs for the protection of surface water resources and through compliance with a NPDES permit and NCRWQCB requirements. Monitoring and contingency response measures would be included in the SWPPP to verify compliance with water quality objectives for surface waters during construction. Particular emphasis would be placed on dissolved oxygen, floating material, oil and grease, and turbidity (or sediment) as these are generally the water quality constituents of most concern during construction-related activities.

Impact HWQ-2: **Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rates of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**

This impact analysis addresses CEQA Guidelines Appendix G checklist item IX.b) and the associated thresholds of significance identified in Section 4.8.3.

Construction

Construction of the pipeline, pump station, and improvements to the Approved Samoa WWTF could require dewatering in the immediate vicinity of excavations and installation of underground features at areas where groundwater depths are shallow. Groundwater withdrawn from the construction areas would be subsequently discharged to land. Such dewatering would be temporary, and prolonged lowering of the groundwater levels in any one location would not be necessary. Such temporary dewatering would have, at most, a very small effect on localized water levels in the immediate vicinity of the excavation, and no substantial deficit in the local groundwater basin or lowering of water levels would occur. Impacts to groundwater from dewatering during construction would be less than significant. Construction of the improvements to the Approved Samoa WWTF would result in a minor increase in impervious surface coverage at the WWTF site, which may reduce the amount of direct infiltration runoff into the ground. This would have a **less than significant** impact on groundwater recharge due to the limited area of effect.

Operation

Operation of the project under the Short-Term Phase would not directly utilize groundwater, and would not result in an increase in population that would indirectly increase groundwater demand. Although implementation of the Long-Term Phase would provide sewer service to up to 62 new infill residential units, the impact of developing the units, including impacts on groundwater, were evaluated in the certified General Plan EIR. Countywide, the impacts of planned additional development included construction of additional impervious surfaces

and conversion of forest and agricultural lands that would reduce groundwater recharge (Humboldt County 2017).

Neither the Short-Term nor Long-Term operation would result in changes in impervious surface coverage or other physical development that would affect groundwater depletion or recharge. This impact would be **less than significant**.

Summary

Construction of the project may require dewatering due to shallow groundwater in the vicinity of the project. Impervious areas would increase slightly. However, construction would not result in a depletion of groundwater supplies or interference of groundwater recharge and would have a **less than significant** impact.

Operation of the project would not directly utilize groundwater or result in changes in impervious surface coverage or other physical development that would affect groundwater depletion or recharge and would have a **less than significant** impact.

Significance *Less than Significant*

Mitigation **None Required**

Impact HWQ-3: **Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or the increase in the rate or amount of surface runoff, in a manner which would result in substantial erosion or siltation or flooding on- or off-site?**

This impact analysis addresses CEQA Guidelines Appendix G checklist items XI.c) and XI.d) and the associated thresholds of significance identified in Section 4.8.3.

Project improvements related to the pipeline and pump stations would be located underground. Project improvements at the Approved Samoa WWTF would increase the amount of impervious surface, but it would not change the surface elevation or hydrology at the facility. Stormwater at the WWTF would divert to on-site stormwater facilities with implementation of the WWTF improvements. The project would not result in an alteration of surface slopes, and there are no streams or rivers in, or adjacent to the project site. Therefore, the project will not substantially alter existing drainage patterns of the site or area, including altering a stream or river or increase the rate of surface runoff that would results in substantial erosion or siltation or flooding. Therefore, the project would result in **no impact**.

Significance *No Impact*

Mitigation **None Required**

Impact HWQ-4: **Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, provide substantial additional sources of polluted runoff?**

This impact analysis addresses CEQA Guidelines Appendix G checklist items XI.e) and XI.f) and the associated thresholds of significance identified in Section 4.8.3.

Project improvements at the Approved Samoa WWTF would increase the amount of impervious surface. But stormwater at the WWTF would divert to on-site stormwater facilities with implementation of the WWTF improvements. Therefore, the project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, provide substantial additional sources of polluted runoff, or otherwise substantially degrade water quality. The project's impact would be **less than significant**.

Significance *Less than Significant*

Mitigation **None Required**

Impact HWQ-5: **Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**

This impact analysis addresses Appendix G checklist item XI.g) and the associated thresholds of significance identified in Section 4.8.3.

The proposed project does not include the construction of new housing or structures for human occupancy. Therefore, the project would result in **no impact**.

Significance *No Impact*

Mitigation **None Required**

Impact HWQ-6: **Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?**

This impact analysis addresses CEQA Guidelines Appendix G checklist item XI.h) and the associated thresholds of significance identified in Section 4.8.3.

The proposed project does not include the construction of any new aboveground structures which would be located in the 100-year flood zone or which would impede or redirect flood flows (Figure 4.8-1). Collection system piping would be located underground within areas of 100-year flood zone, and as such, would not impede or redirect flood flows. Therefore, the project would result in **no impact**.

Significance *No Impact*

Mitigation **None Required**

Impact HWQ-7: Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

This impact analysis addresses CEQA Guidelines Appendix G checklist item XI.i) and the associated thresholds of significance identified in Section 4.8.3.

The project improvements that are above ground, such as pumps and the improvements to the Approved Samoa WWTF, are not located within a mapped dam failure inundation zone, floodway, other special flood hazard zone, nor within an area at risk from levee failure. Therefore, **no impact** would occur.

Significance *No Impact*

Mitigation **None Required**

Impact HWQ-8: Would the project be subject to inundation by seiche, tsunami, or mudflow?

This impact analysis addresses CEQA Guidelines Appendix G checklist item XI.j) and the associated thresholds of significance identified in Section 4.8.3.

No seiche or mudflow hazard is known at the project site. Other than isolated high dunes northwest of the town of Samoa, the entire Samoa Peninsula typically is modeled as being subject to inundation during moderate to large tsunami events. HBAP Section 3. 17(B) (Hazards, Development Policies) state in part:

1. *Tsunamis - New development below the level of the 100 year tsunami run-up elevation described in Tsunami Predictions for the West Coast of the Continental United States (Technical Report H-78-26 by the Corps of Engineers) shall be limited to public access, boating, public recreation facilities, agriculture, wildlife management, habitat restoration, and ocean intakes, outfalls, and pipelines, and dredge spoils disposal. <u>New subdivisions or development projects which could result in one or more additional dwelling units within a potential tsunami run-up area shall require submission of a tsunami vulnerability report which provides a site-specific prediction of tsunami run-up elevation resultant from a local Cascadia subduction zone major earthquake.</u>*

The HBAP (STMP [Hazards] Policy 4) requires that prior to the approval or issuance of a coastal development permit for the comprehensive division of STMP Master Parcel 2 or other development of lands subject to the STMP Land Use Plan (such as construction of project improvements at the Approved Samoa WWTF), the landowner/developer shall demonstrate compliance with the Final Tsunami Safety Plan.

The project involves installation and operation of wastewater pipelines, associated pipeline infrastructure, and improvements to the Approved Samoa WWTF. The majority of the project facilities would be underground and would not be affected by inundation by tsunami. The project's improvements to the

Approved Samoa WWTF would be above ground and would be exposed to risk of inundation by tsunami. However, implementation of the tsunami vulnerability report (HBAP Section 3.17(b)(3)) and demonstration of compliance with the Final Tsunami Safety Plan and STMP (Hazards) Policy 3 will be required. As such, the impact to the project's improvements to the Approved Samoa WWTF from inundation by tsunami would be **less than significant**.

Significance *Less than Significant*

Mitigation **None Required**

4.8.6 Cumulative Impacts

Impact: HWQ-C-1: Would the project result in a cumulatively considerable contribution to a cumulative impact related to hydrology and water quality?

The geographic scope for the analysis of potential cumulative hydrology and water quality impacts in the study area consists of the project site and the immediately surrounding areas of the Samoa Peninsula. Refer to Section 4, Environmental Analysis, Table 4.1 (Projects Considered for Cumulative Impacts) for a summary of the cumulative projects.

Surface Water Quality and Storm Water System Capacity

As described in Impact HWQ-1, construction of the project, if not properly managed, has the potential to violate water quality standards. Operation of the WWTF is estimated to improve water quality by removing existing negative effects to groundwater quality from continued use and potential future failure of existing private septic systems within Samoa Peninsula. With the implementation of Mitigation Measure HWQ-1a, impacts to surface water quality as attributable to the project would be reduced to a less than significant level through the inclusion of focused BMPs for the protection of surface water resources. As described in Impact HWQ-3 above, the project would not substantially alter existing drainage patterns of the site or area in a way that would result in substantial erosion or siltation or flooding (no impact). As described in Impact HWQ-4 above, the project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (less than significant impact).

Cumulative projects listed in Chapter 4, Environmental Analysis, Table 4-1 (Projects Considered for Cumulative Impacts) could have adverse effects regarding hydrology and water quality during construction. Therefore, cumulative impacts related to surface water quality could be significant.

Mitigation Measure HWQ-1a has been included that would reduce impacts on water quality to a less-than-significant level, including preparation of a SWPPP and compliance with the requirements of the NPDES General Construction Permit.

Relevant cumulative projects identified in Table 4.1 disturbing more than one acre of land would also be subject to the NPDES General Construction Permit, which would require development and implementation of SWPPPs to avoid water quality impacts. Therefore, with implementation of Mitigation Measure HWQ-1a, the project's potential contribution to any such cumulative water quality impact would **not be cumulatively considerable**.

Groundwater

As described in Impact HWQ-2, the project may require dewatering in the immediate vicinity of excavations and installation of underground features at areas where groundwater depths are shallow. The cumulative projects listed in Table 4.1 may also require the temporary pumping of groundwater in localized areas for excavation dewatering. Therefore, cumulative impacts related to groundwater could be significant.

Mitigation Measure HWQ-1b has been included that would reduce impacts on groundwater to a less-than-significant level by requiring construction dewatering permits.

Relevant cumulative projects identified in Table 4.1 that require dewatering of groundwater would also be required to obtain construction dewatering permits. Therefore, with implementation of Mitigation Measure HWQ-1b, the project's potential contribution to any such cumulative water quality impact **would not be cumulatively considerable**.

Flooding and Inundation

As described in Impacts HWQ-5 through HWQ-8 above, the project would not place housing or structures which would impede or redirect flood flows within a 100-year flood hazard area, is not located within a mapped dam failure inundation zone, floodway, other special flood hazard zone, and is not within an area at risk from levee failure. The project area is subject to an enduring hazard associated with tsunami inundation; however, the majority of the project facilities are underground and would not be affected by inundation by tsunami. The project's above-ground facilities are required to demonstrate compliance with the Final Tsunami Safety Plan and would be subject to an impact that is less than significant.

Relevant cumulative projects identified in Table 4.1 would also be subject to the enduring hazard associated with tsunami inundation, but would similarly have a less-than-significant impact due to regulatory compliance. Therefore, the risk of inundation by tsunami would **not be cumulatively considerable**.

Significance *Cumulatively Considerable*

Mitigation **HWQ-1a Manage Stormwater during Construction**

See Impact HWQ-1a, above, for the complete description of this mitigation measure.

HWQ-1b Construction Dewatering Permits

See Impact HWQ-1b, above, for the complete description of this mitigation measure.

After Mitigation *Less than Cumulatively Considerable (Less than Significant)*

4.8.1 References

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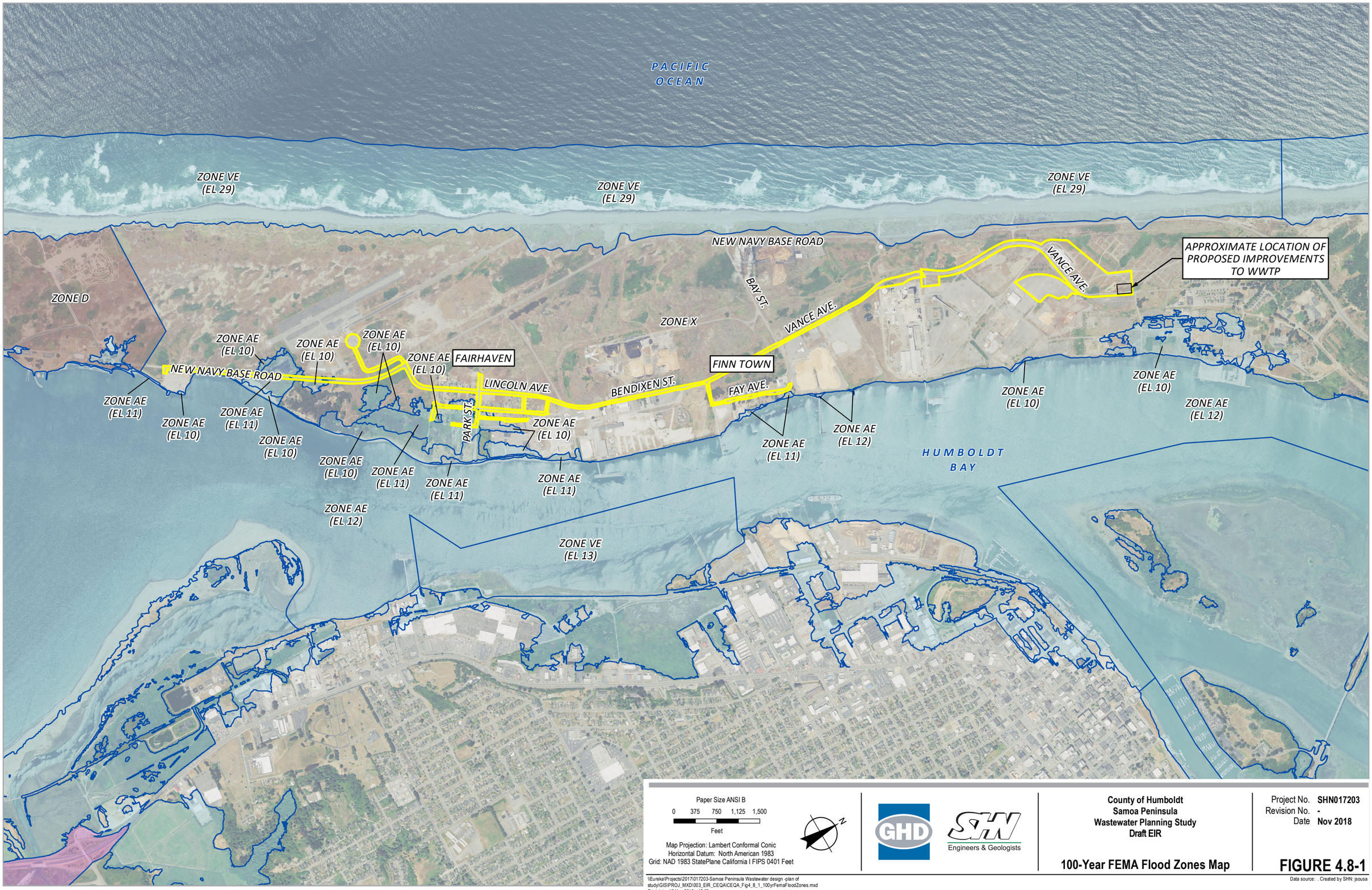

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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GHD

SHN Engineers & Geologists

County of Humboldt
Samoa Peninsula
Wastewater Planning Study
Draft EIR

100-Year FEMA Flood Zones Map

Project No. **SHN017203**
Revision No. **-**
Date **Nov 2018**

FIGURE 4.8-1

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